S/E 12/31/88

The Commonwealth of Massachusetts

Department of Environmental Quality Engineering

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Metropolitan Boston - Northeast Region

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Daniel Greenbaum
Commissioner

MEMORANDUM

TO: Harish Panchal, MSCA Coordinator, Boston
THRU: Liz Callahan, Environmental Analyst, NERO LC
FROM: Robert Huang, Environmental Engineer, NERO RH
DATE: November 30, 1988
SUBJECT: BEVERLY - Vitale Flyash Pit, L.P. Henderson Rd.
DEQE Case No. 03-1319

SITE INVESTIGATION SUMMARY

This Site Investigation (SI) has been conducted by the Department of Environmental Quality Engineering (DEQE), Division of Hazardous Waste, Northeast Regional Office for submission to the Environmental Protection Agency (EPA) under the Multi-Site Cooperative Agreement (MSCA) program. The following information is compiled from reports submitted the the DEQE pursuant the Massachusetts General Law Chapter 21E.

Executive Summary

The subject site is an 18-acre parcel of land on Henderson Road in Beverly, Massachusetts. The Vitale brothers, Stephen and Michael, have owned this property since the 1950's. The Vitale brothers have a long history of noncompliance with local and state laws and regulations with respect to solid waste dumping at the site. The solid waste is mostly flyash, but also includes demolition debris, asphalt roof shingles, asbestos siding, rubber tires, mattresses, household appliances, wood timber, metal scraps, car bodies, municipal refuse, and empty steel drums. A recent Consent Order with the City of Beverly and Ronald Vitale (Stephen Vitale's son) led to an environmental assessment of the site performed by Normandeau Engineering, Inc. (NEI). This comprehensive study included test pit investigations, the installation of twelve monitoring wells, and water and sediment sampling from an on-site stream. The test pit excavations did not reveal any buried drums on site. EP toxicity tests on the soil proved negative. Volatile organic compounds (VOCs) and acid and base/neutral extractables were not found in the soil. VOCs were detected at low levels in groundwater near an underground tank that was excavated in 1986. Trace metals, arsenic and selenium, were detected at levels slightly higher than drinking water standards. Acid/base neutral extractables were not found in groundwater. Cyanide was detected in one groundwater sample and was attributed to leaching from upgradient abutting property. The DEQE is currently planning a second round of sampling.

Site Description

The Vitale Flyash & Solid Waste Dumpsite (the site) is located in the northeast section of the Salem Quadrangle of the USGS topographic map. The site is an 18 acre parcel which is represented as Lot 6 on Page 90 of the Beverly Assessors Map, and is located near the Wenham and Danvers town lines. The site is separated from the former Casco Chemical site (EPA ID#MAD002577617) to the west by woodland and is bounded by L.P. Henderson Rd. to the south, an undeveloped parcel to the north, and by Cabot Street (Rte. 97) to the east. The nearest residences are less than 1/4 mile from the site. A stream, known as Airport Stream, that originates at Beverly Airport (west of Casco Chemical) runs west to east through the site and empties to Wenham Lake located 1,000 feet away to the east. (See Attachment 1 for Site Map.)

The Vitale brothers acquired the property in 1950's. The site was used as a base for their construction companies. During this time period, sand and gravel was mined from the site for use in their construction activities, or for clean fill. The New England Power Co. had an arrangement to dispose salt water quenched fly ash from their Salem Power Station at the site to fill the gravel pits on the property. A leaching analysis of the flyash performed by Fram Corporation for New England Power Co. in presented in Attachment 5. High sodium and chloride concentrations were found. In 1980, the City of Beverly took over ownership of the site from the Vitale Brothers due to their failure to pay real estate taxes.

The 18-acre site is currently uniformly filled with up to 30 feet of flyash. Other solid wastes and demolition debris have also been deposited on site. Vegetation covers most of the filled portion of the site. There is one building on site which is accessed via a driveway off L.P. Henderson Road. The single one-story structure houses offices and a garage used for automotive repairs. Wetlands associated with Airport Stream exist on-site and have been slowly filled by the erosion of flyash from the filled portion of the site into the low-lying wetlands. The banks of the wetland adjacent to the filled area of the site are eroding thereby slowly filling the adjacent wetland. Flyash has been observed in the Airport Stream which drains the filled wetland. A delta of fly ash has been formed at the convergence of Airport Stream and Wenham Lake. The general terrain slopes down at a 2% grade towards Wenham Lake in the east.

A large number of surface water bodies and supply wells are located within a four mile radius of the site. 0.25 mile to the east lies the Wenham Lake. 1.75 miles to the north is a Wenham town well that, along with the Longham Reservoir three miles to the east, the Putnamville Reservoir 2 miles west and the Wenham Lake well supplies Salem and Beverly (80,000 people) at 13 million gallons per day (MGD). Two Wenham wells, 2 miles to the north on Pinetree Dr and Caisson Rd supply 1.75 MGD. 1.75 miles north is the Pleasant Pond well in Wenham that supplies water at a rate of 1.3 MGD. The Danvers River is located four miles to the south.

Climatology

The following information is compiled form data collected at Logan International Airport (NOAA, 1984). The average annual precipitaion is 44 inches and is evenly distributed throughout the year. The highest 24-hour rainfall recorded was 8.4" in August 1955. Average daily temperatures range from 22.81 °F (January) to 81.8 °F (July) with recorded extremes of -12 °F (January 1957) and 102 °F (July 1977). Snowfall averages 10.0 inches per year. Prevailing winds are from the northwest in fall/winter and from the southwest during spring/summer at an average speed of 12.5 miles per hour.

21E History & Enforcement Status

The Vitale site has a long record of noncompliance with local and State laws and regulations. The first official documentation of this in DEQE records is a letter dated March 25, 1969 regarding a Massachusetts Division of Water Pollution Control inspection of the Vitale property. The document noted that holes at the site were being filled with fly ash without the necessary Beverly Board of Health permit, as required by MGL Chapter 111 Section 150A.

On September 17, 1971 a Subpoena, Notice and Restraining Order were issued by the Department of Wetlands to Michael and Stephen Vitale, their construction companies and subcontractors to refrain from any more work impacting the wetland at the site as it is a violation of MGL Chapter 131 Section 40. On June 13, 1973 Massachusetts Department of Natural Resources (DNR) sent a letter to Stephen Vitale notifying him that residents living on Trask Street, 500 feet away to the east, have complained that fly ash is eroding into the swamp and stream causing a damming effect and flooding in their yards. Additionally, these neighbors complained of a "severe dust problem" in the summer months when the fly ash dumped on-site dries and becomes airborn. DNR requested that Mr. Vitale immediately stabilize the piles of fly ash.

On August 26, 1974, the Beverly Board of Health notified Steven Vitale that the fly ash disposal area constituted illegal disposal and was in violation of MGL Chapter 111, Section 122. Mr. Vitale was also notified that this filling was also a violation of the Hatch Act in addition to creating water pollution problem.

Analyses of water samples taken by the Massachusetts Department of Public Health (DPH) on December 3, 1974 from Airport Stream downstream from the site show elevated levels of total coliform, fecal coliform, suspended solids, total solids, conductivity, iron, chloride, sodium, ammonia, pH, and alkalinity when compared to upstream samples. No VOCs or priority pollutants were found in the downstream surface water samples (Attachment 3).

On February 24, 1975, the Massachusetts Department of Public Health (DPH) issued an Order to Michael and Stephen Vitale and their associated construction companies. The violations cited in this Order were:

(1) The site is being used as a solid waste disposal area and was never assigned by the Beverly Board of Health under MGL Chapter 111, Section 150A as an approved site for disposal of refuse.

(2) Waste from the site is being released into Airport Stream and Wenham Lake.

(3) Conditions at the site constitute a nuisance and an interference with public health.

Steven Vitale was ordered to:

(1) Prevent siltation and pollution of the stream.

(2) Cut back the slope to the wetland, grade, cap, and vegetate the site.

(3) Commence and complete work within given time frames.

From the time of the 1975 DPH Order to 1980 (when the City of Beverly took control of the property), the Vitales have ignored all subsequent DPH and DEQE Orders, requested hearings, etc. resulting in litigation with DPH & DEQE, through the Office of the Attorney General (see Attachment 4).

Haley & Aldrich performed an environmental assessment on November 26, 1984. Five boring logs indicated that the site has been filled with flyash to a depth of 14 to 36 feet below grade. Groundwater was observed at 10 to 21 feet below grade. Cambridge Analytical Associates, Inc. analyzed composite soil samples from the above mentioned borings at the site and reported finding 100 ppb of methylene chloride, 20 ppb of 1,2-dichloroethane, 300 ppb of 1,1,1- trichloroethane, a trace of napthalene. These contaminants are found in solvents and degreasers. Napthalene is used in a variety of products and industrial processes. These compounds are considered to be toxic and methylene chloride and 1,2-dichloroethane are suspected carcinogens (See Attachment 2 for boring logs and analytic data).

On March 7, 1986, a representative of the DEQE inspected the site and witnessed uncontrolled disposal of solid waste and fly ash. The DEQE suspected that the former gravel pits have been filled with waste similar to that which has been observed and/or waste of unknown origin. There are no records of what has been disposed at the site. The possibility exists that various hazardous materials are buried on the property.

DEQE inspectors observed oil-stained soil at the site in the vicinity of four underground storage tanks which were located near the lone one-story building. The contents of the tanks were reported as gasoline, diesel fuel, heating fuel, and waste oil. The tanks were subsequently removed in 1987. At least one of the tanks had leaked, and seventy five cubic yards of contaminated soil from around the leaky tank and in the area of the surface soil staining was excavated and removed off-site (Attachment 4).

A Consent Order dated April 4, 1986 with the City of Beverly and Ronald Vitale (Stephen Vitale's son) eventually led to an environmental assessment performed by Normandeau Engineers, Inc. in August of 1988. The assessment included two geophysical surveys, test pit monitoring, monitoring well installations, and water and stream sediment sampling. The Order is contained in Attachment 4.

A magnetometry survey and a terrain conductivity survey were completed. Several areas exhibiting anomalous readings were revealed and perceived as containing buried drums. Test pits were excavated at these locations.

The test pit investigations did not reveal the presence of buried steel drums as only flyash and municipal-type refuse were encountered. Attachment 6 includes the anomalous geophysical data, analytical results of soil testing, and the test pit locations. Eight flyash samples were collected from the test pits and analyzed for toxicity with the Extraction Procedure Toxicity test method, VOC content, and semivolatile acid/base neutral extractables. The flyash samples passed the EP Toxicity test for all eight RCRA metals. VOCs and base/neutral extractables were not detected in flyash samples.

Twelve monitoring wells were subsequently installed on-site during June, 1988. The well locations are shown on the groundwater elevation map in Attachment 7. Groundwater flows to the east towards Wenham Lake. On July 12, 1988 one round of groundwater, stream water and sediment samples was collected. The samples were analyzed for the presence of volatile organic compounds, acid and base/neutral compounds, metals, cyanide, sulfides, pesticides, herbicides, and ammonia. The complete results of groundwater testing are presented in tables along with complete analytic results from Skinner & Sherman Labs in Attachment 8.

Total benzene, toluene, ethylbenzene, and xylene concentrations (BTEX) of 176 part per billion (ppb) and 203 ppb were found in wells MW-3S and MW-7S, respectively. No other water samples had detectable level of BTEX. The two sediment samples did not contain VOCs. The contaminant source for MW-7S is likely the gasoline underground storage tank removed in 1986. The MW-3S source is not known. Halogenated solvents were found in upgradient MW-1S in very low concentrations: 1.2-dichlorethene (4ppb),

1,1,1-trichloroethane (3ppb), and trichloroethene (8ppb). Acid and base/neutral compounds, sulfides, herbicides, and pesticides were not detected in any of the aqueous samples. Both arsenic and selenium were detected on-site at levels greater than allowable drinking water standards. Sodium was found at levels in excess of the Massachusetts Health Advisory level of 20 mg/l. The flyash once quenched with saltwater, is the likely source of the elevated levels of sodium. Cyanide was detected in MW-5S. The source had been proposed as the upgradient site known as the Orne Property, which has cyanide contamination. Ammonia was also found in the western portions of the site, the source of which is unknown. NEI recommended a second round of sampling, without the Extraction Procedure Toxicity test on the flyash, to confirm the first round's findings and define the source and nature of the ammonia contamination.

Conclusions and Recommendations

Direct exposure to hazardous materials at the site is likely to be minimal, although surface stains with oil have been documented in the past. Currently, there are no overt areas of surface soil contamination, as the oily stained areas have been removed. The population possibly affected by any additional surface soil contamination would be limited due to the semi-isolated nature of the site.

However, water soluble contaminants buried below the static water table may leach to the groundwater and travel with the groundwater flow towards the discharge point which may be Airport Stream or Wenham Lake. The Airport Stream discharges to Wenham Lake .

A second round of sampling is needed to confirm the findings. The NEI sampling proposal should be reviewed and discussed by all involved parties to determine the proper scope of the investigation. The sampling should provide the following information:

1. The ammonia contaminant source.
2. The location of the halogenated compounds contaminant source.
3. The source of the gasoline contamination found in MW-3S.
4. The seasonal fluctuations and migration patterns of groundwater contamination.